

Soil Report

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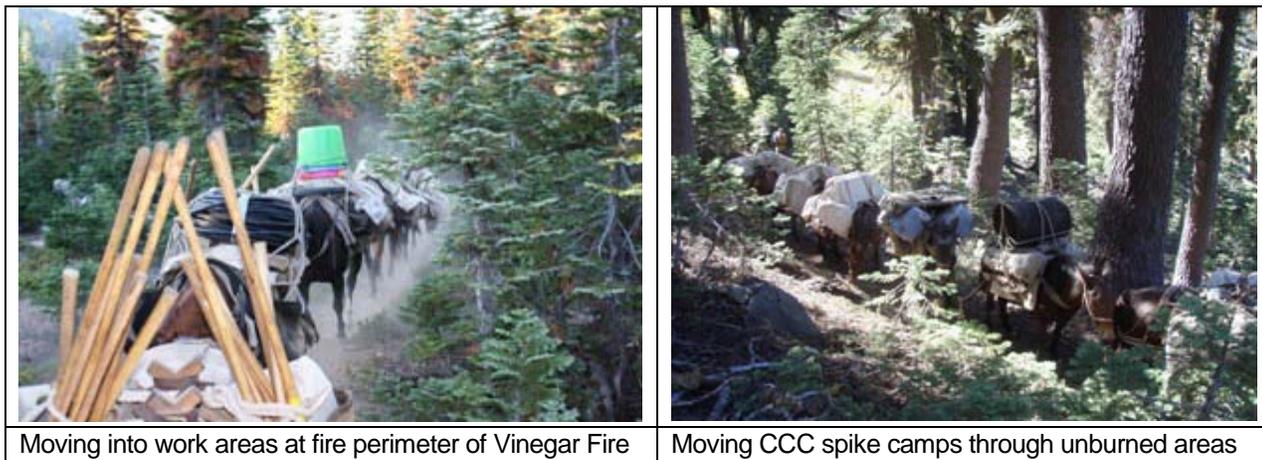
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Yolla Bolly Complex Trail Treatment Monitoring Report 2008

Executive Summary - Soil Quality Standards and Soil Productivity

This report documents trail treatment effectiveness monitoring part for the Shasta-Trinity Burned Area Emergency Response (BAER) implementation effort for the fires of 2008. Trail crossing armoring, trail water-bars, stump burnout trail repair, and hazard-tree removals were applied on main wilderness trails in the Yolla Bolly Complex fires that suffered moderate to high soil burn severity. Overall effectiveness after 1 year was good for timbered sites and fair to good for brushy sites. Most brushy sites lacked residual bowels for adequate cover, were on south-facing slopes in windy canyons that had more overland flows that caused some trail damage. Timbered sites had residual bowels, were on north and east-facing sites that resisted wind displacement that had good to adequate cover that reduced overland flows and trail damage.



Moving into work areas at fire perimeter of Vinegar Fire

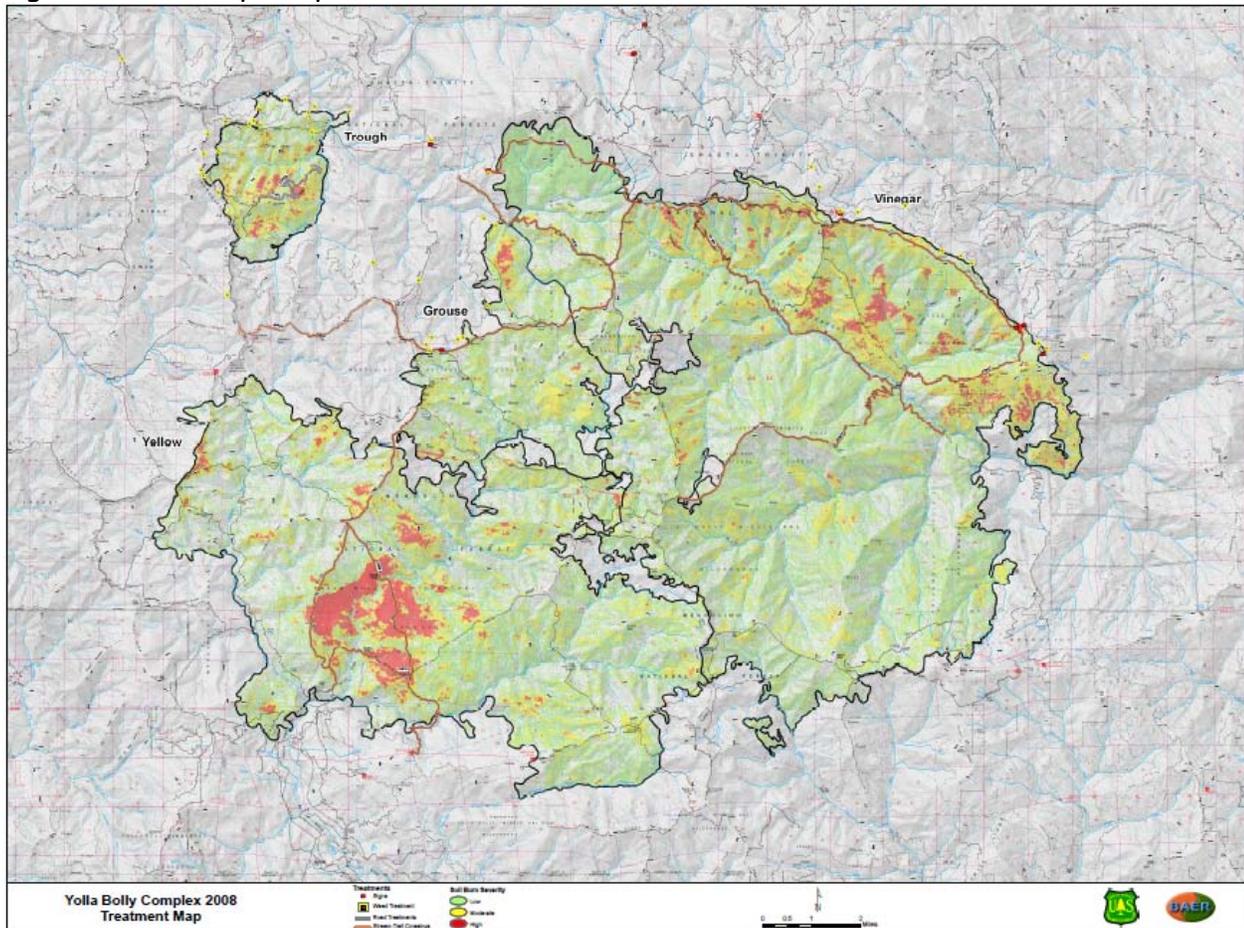
Moving CCC spike camps through unburned areas

Forest Plan Standards: Implement forest soil quality standards as they relate to soil productivity and soil erosion. (Ref: Forest Plan 4-25e. Forest Soil Quality Standards, in relation to soil erosion).

Objectives: On June 20-21st, 2008, strong thunderstorms hit the Shasta-Trinity National Forest producing dry lightning causing hundreds of wildfires that formed 4 large complex fires (SHU-Lightning, Lime, Iron, and Yolla Bolly complexes). Many large areas were burned hot and lacked adequate cover for erosion control to protect critical downstream resources (roads, trails, watersheds, and fish habitat). Treatment objectives were to prevent trail erosion by armoring crossings, water-baring, repairing trail stump burnouts, and remove hazard trees for trail crew safety. Monitoring was conducted over a period of one year to evaluate the effectiveness of various trail treatments.

Methods: Representative trails were walked and pictures were taken of before and after treatments along with terrain data (hillslope cover, aspect, slope, soil type, soil map unit, and dominate overstory vegetation) to evaluate treatment effectiveness after one year (see treatment map, Figure 1 below).

Figure 1: Yolla Bolly Complex Fires of 2008 Treatment Locations



Results: On the average for areas that were timbered with low to moderate soil burn severity trail crossing treatments were highly effective (Grouse Fire see Table 1 below). In areas with timber/brush cover (Vinegar Fire) that was burned moderate to hot, trail crossing treatments were highly effective vs. trail burnout treatments were moderately effective due to settling (see Figures 2 and 3 below). With areas that had dominate brush (Yellow and Vinegar Fire S-facing steep slopes) and high soil burn severity, treatments (crossing armoring, waterbars, burnout repairs) were moderately effective due to increased overland flows.

High burn severity areas in brush had erosional pavement between bushes where all fine soil was washed away leaving rock fragments as cover. Erosion recovery in these areas expected to recovery in the next 5 years.

Table 1: Trail Repair Effectiveness per Fire, Burn Severity and Terrain.

Yolla Bolly Complex Fires Trail Treatments:				
Fire & Trail	Terrain	Burn Severity	Treatment	Effectiveness
Grouse - 10W39	Ridgeline, 5-35% slopes, Neuns loam, timber	Low - Mod	Trail Cx Armor	High
Vinegar - 09W36, 37, 39	S-facing, 40-60% slopes, Yolla Bolly loams, timber/brush	Mod - High	Trail Cx Armor, Burnouts	High - Mod
Yellow - 11W04, 36, 51	NW-facing, 20-60% slopes, Sheetiron-Yolla Bolly gr loams, timber/brush	High	Trail Cx Armor, Burnouts, Waterbars	Mod - Mod - Mod

Recommendations: Use large rocks and place small rocks and gravel to reduce undermining of trail stream crossings. For stump burnouts, pack dirt and rocks into burnout and leave excess soil on top for settling. For areas that were very steep (greater than 60% slopes) and on exposed burned slopes, concentrate treatments on stream crossings and water-baring to stop trail flow capture (see Figure 3 below).

Figure 2: Trail Crossing Repair on Humboldt Trail in Timber and After One Year

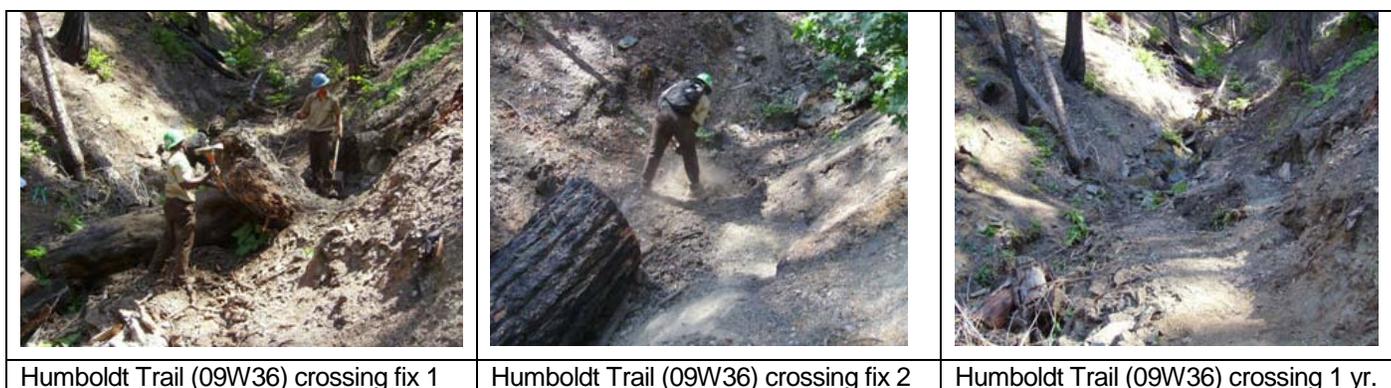


Figure 3: Trail Repairs on Humboldt Trail in Brush/Timber and After One Year



Public Involvement: occurs during the NEPA process for identified projects.

Where is data located: Physical Science Dept., Shasta-Trinity National Forest Headquarters, Redding, CA.